

Microcomputer Confusion:  
Beware of Giants Saying, "Here We Go Again"

It takes a special attitude to live and work in close proximity to a giant. If anything, they can be complex individuals to deal with.

To the neighbors of one particular giant, it has become a fact of life to second-guess when he will hand down his next edict and who might suffer the consequences. Few of these neighbors, however, would deny that there are economic benefits in living under this giant's shadow. But success in this arena calls for courage, careful planning, and a wizard's understanding of the future.

Given the giant's whims and the break-neck pace that these people must keep, one would not exactly describe this anxiety laden atmosphere as tranquil.

For example, on an otherwise tranquil Spring day over one year ago the giant ended months of rumor and speculation with the simple announcement:

"In 1981, we introduced the world's most successful personal computer.

"Here we go again. . ."

Prior to the giant's (IBM's) April 2nd unveiling of the Personal System/2 (PS/2) microcomputer lineup and the new operating system (OS/2), rumors abounded that the new hardware would be unclonable (eg., other manufacturers would not be able

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to duplicate the new hardware, forcing consumers to pay IBM's price) and that the operating system software would be completely incompatible with current application software (eg., ones favorite word processing program would not run with the new operating system, forcing the current IBM PC user, interested in upgrading his system, to buy all new software).

In the year that has passed since the announcement, the hardware has proven to be clonable (though, the legality of it has yet to be tested) and the operating system, which is just now being shipped to users, will allow users to run their current application software (though without all the bells and whistles that the new operating system promises).

What has not been decided in the past year is how far the market will follow IBM with these new designs.

In the mainframe and minicomputer markets, where IBM's dominance has reached mythical proportions, the idea of hesitating to follow IBM's lead <sup>13</sup> ~~would~~ be utterly unthinkable. Regarding IBM's dominance Pulitzer prize-winner, Tracy Kidder wrote in The Soul of a New Machine:

"IBM quickly established world-wide hegemony . . . For some years the computer industry consisted almost exclusively of IBM and several smaller companies---'IBM and the seven dwarfs,' business writers liked to say."

But from the very beginning IBM's interaction with the microcomputer community has exhibited more of a give and take attitude. For one thing, not long after successfully entering

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the market in August of '81 with the original IBM PC, IBM released a series of microcomputers that didn't catch on.

For example, in late 1983 IBM introduced the IBM PCjr which had a calculator or "chicklet" style keyboard. The microcomputer press attacked the machine's design. IBM reintroduced the machine with a more suitable keyboard but when sales failed to improve, it discontinued the model, leaving those who had purchased the model to look for service and upgrades elsewhere. Then IBM marketed the Portable PC, the PC AT/370 and the PC XT/286. But all of them failed to make a dent in the market and were quietly discontinued.

So, last April when IBM said "Here we go again," the microcomputer market, having some experience with the giant's previous "great ideas," were apt to echo the phrase, but with a very different meaning. They looked upon the then impending voyage as more of a "snipe hunt" than as the beginning of a wonderful ride on a ferris wheel.

A twelve year veteran of the microcomputer market, Greg Fisher from Advent Products of Anaheim, said in a recent interview:

"I think there's too much market resistance to be told, 'Now you've got to scrap everything up to this point and look at something entirely different.' . . . IBM has proven to not necessarily provide the pacing and driving element in the marketplace. They may drive it. But they can't control it any longer. They waited too long to get away from the PC

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architecture. Had they done it [introduced the PS/2 & OS/2] two or three years ago they probably could have pulled it off very successfully. But with the large number of the mistakes, the [PC] juniors and what-have-you, they just don't have the control of the market [like] they used to."

At the center of the controversy is the microprocessor chip, the Intel 80286 (or 286), that IBM has chosen to build its new operating system on.

The basic design of the 286 was already set before IBM used it's little brother, the 8088, in the original IBM PC, to launch it's entry into the microcomputer market.

As history then went on to demonstrate, the 8088 and its operating system, MSDOS, became the microcomputer industry standard and soon calls came from microcomputer users and software designers for improvements.

Improvements were made. MSDOS went through versions 1.0 to 1.25 to 2.0 and 3.0. On the hardware end, the call then fell to the 286 which IBM used in its "Advanced Technology" (AT) microcomputers.

Unfortunately the improvements that Intel had designed into the 286 are not accessible when the chip is used to mimic it's little brother, the 8088.

An operating system, such as MSDOS, is the core program that makes up the "brains" and "personality" of a computer. It's the "guy" responsible for the "smiling disk" icon when one first turns on a Macintosh or the rather cryptic "A>" prompt when one turns

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on an MSDOS computer. It enables the computer hardware to "talk" to its disk drives and screen and it is what the computer user "talks to" when he types on the keyboard (and you thought no one was listening).

But operating systems are limited to working only with the microprocessor that they were written for. The Macintosh's Finder/Multifinder operating system will only work on a Motorola 68000 (or chips that mimic the 68000). And MSDOS will only work with an 8088 (or chips that mimic the 8088, such as the 8086 or the 286 or NEC's V-20 and V-30 chips). So a 286/AT microcomputer running MSDOS is little more than fast PC/XT. And the potential of the 286 remained untapped. Still, cries went up for more improvements.

Intel went on to design the 80386 (or 386) which could not only mimic the 8088 and the 286 but it could also act like several 8088s simultaneously (in addition to being a well-behaved 386).

But still all of these improvements remained untapped. What was needed was a large scale update of MSDOS. What IBM did at this point is difficult for many microcomputer observers to understand.

Of the two microprocessors available from Intel, the 286 and the 386, the 386 seemed to be the logical choice for this new operating system. An operating system based on the 386 could have the ability to run more than one program at once (multitasking) and run complex user programs which are too big

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to work under MSDOS. At the same time this operating system could run multiple programs originally written for MSDOS. What this would have meant is that current IBM PC/XT users could have continued to use the MSDOS programs that they were using and also tap into the all of the power of this new operating system without skipping a beat (or buying all new and expensive software).

But IBM chose to build the new operating system, OS/2, around the 286. While the 286 also features the ability to run more than one program at once and run programs too complex to work under MSDOS, it cannot do all these things and simultaneously run current MSDOS programs. So, someone thinking about using all of this new technology must face the possibility of eventually replacing all of his application software (not all at once mind you, you can still use it, but you don't have access to all the features of the new operating system when running your trusty ol' MSDOS programs). This ends being little different from running an IBM AT under MSDOS. So why buy OS/2?

Microcomputer columnist, John Dvorak writes that IBM decided to use the 286 instead of the 386 to protect its mainframe computer business:

"Because the 80386 impinges on the performance of its mini-mainframe (aka the 9370-20) and its System/36 and System/38 minis, IBM chose to have Microsoft design OS/2 to be an 80286 operating system. This is especially important when one sees the impact of SAA [IBM's "bible" on application software interfaces],

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which will create program compatibility up and down the IBM line. Heaven forbid the grand scheme would eat into the high profits of the heavy iron! Then, to make sure that only the big boys get to play in this arena, they price OS/2 beyond the budget of the single user or even the budgets of most small businesses. Even if they could afford it, can they afford to toss out all their applications and buy new, more-expensive ones?"

Of course, there are some <sup>Who</sup> ~~that~~ feel that Dvorak is a bit of a rabble-rousing reactionary.

Two factors <sup>the first</sup> that Dvorak fails to mention in his IBM conspiratorial theory is that Intel's 386 is still priced very high and produced in limited numbers (which would not make it a good candidate for a new operating system), and the second is that since the introduction of the Macintosh microcomputer and the explosion of Desktop Publishing, Apple has been breathing down IBM's neck in the business segment of the microcomputer market. IBM had to do something to leap ahead of the competition.

( Unfortunately the whole thing has segmented the market.

What this then means to the prospective or current microcomputer user is that it presents a new level of anxiety behind the decision to buy or upgrade his microcomputer. That is, while the price of PC/XT clones drops to below \$500 and the price of the low end of IBM's PS/2 models, the 25 and 30 (which will not run OS/2), drops closer to \$1000, the consumer has to be aware that in eighteen months time, should the new operating

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system (OS/2) catch on, they may have bought technology destined to become like yesterday's eight-track audio tape machines or Beta-format VCRs. In a word, they may be destined to become orphans of a technological war.

PC World editor, Richard Landry writes:

"The problem is that so many companies are offering so-called next-generation products that it's becoming harder and harder to figure which ones are a truly safe bet. If you can afford to watch from the sidelines for a while, then it may all seem like a great game. But if you have to make a PC purchase---or multiple PC purchases---within the next six months, then it may feel like you're playing Russian roulette. . . At last count there were about seven ways to get into the next generation of computing, but none seems a sure winner."

Byte magazine columnist, Jerry Pournelle also suggests that his readers wait out the storm. Pournelle writes:

"Should you buy a clone, or wait, and if you do get a clone, what kind?"

*should come in earlier*

"That's not easy to figure, but one thing is certain; there are a lot of 16-bit users out there [pre-PS/2 users number about 12 million]. Microsoft [the company that developed MSDOS] isn't about to abandon them, and even if Microsoft were crazy enough to leave all those customers hung out to dry, someone will keep their operating systems up to date."

Someone will keep the operating system up to date. That's a little like going to a restaurant and being told that your



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waiter's name is Nobody. Every five minutes the hostess assures you that Nobody will be right with you. You sit and wait while 25 minutes slowly tick by. Well into your third glass of water and your kid's fifth chewed napkin it occurs to you that nobody indeed is going to wait on you.

Someone will keep the operating system up to date. These are not exactly the words one would want to hear when first plunging into the already confusing world of microcomputer ownership. Fact of the matter is, there is a whole population of microcomputers laying around the nation in various stages of dormancy whose manufacturers have either gone Chapter 11 or are now building microwave ovens. These orphaned microcomputers are still waiting for someone to update their operating systems. Their owners can only say, "Well, it seemed like a good idea at the time."

In fact, when MSDOS became the industry standard it didn't create the position. It took it from someone else.

The victim was an operating system called CP/M, which was written by a company called Intergalactic Digital Research (later just Digital Research).

*But w/ CP/M*

The year was 1976 and CP/M was uniting the microcomputer market under one operating system that made it possible for programmers to write programs that would work on the machines of several different manufacturers. More machines meant more revenue for programmers which encouraged programmers to write all kinds of useful programs. These useful programs encouraged the

*os = 1) flower number 2) tied to the success of these manufacturers*  
*Prior to this every manufacturer had a proprietary*

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sales of more microcomputers, "Look, honey, we can use it to balance the checkbook and plan our next vacation and send form letters to all your relatives." This thing really began to take off.

But then, in 1981, the giant decided that it was time to visit the little hamlet of techno-geeks who were becoming millionaires in Silicon Valley.

Other giants had descended upon Silicon Valley before (Xerox and Hewlett-Packard) but failed to dominate the market. What this giant did and what the others failed to do was to meet the microcomputer market on that market's terms.

IBM did several things the way that small microcomputer manufacturer had done (which were "un-IBM-like"). IBM used an open bus structure (like the then popular Apple II) and published the specifications for it and encouraged independent hardware and software companies to use this open architecture. IBM marketed their PCs through independent retail computer stores and department stores. And, of course, being IBM they had too much clout to be ignored.

These were all huge factors in how IBM became the industry standard but there was one more important factor that eventually led to the demise of CP/M.

CP/M, like all good operating systems, was written to work with one specific microprocessor chip. In this case it was the Intel 8080 (which was later mimicked by the more popular Zilog Z80). And as the <sup>CP/M</sup>operating system caught on, <sup>✓</sup>the <sup>CP/M</sup>microcomputer

just like MS-DOS would later do

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users clamored for improvements. So CP/M went through versions  
1.0 to 1.4 then 2.2.

But a snag was eventually hit. There were no  
microprocessors in the market that CP/M could migrate up to from  
the 8080/Z80. When Digital Research released CP/M version 3.0 <sup>very few</sup> ~~no~~  
new programs were released that could take advantage of the new  
features and interest started drifting in the direction of the  
newly release IBM PC and MSDOS.

With CP/M stalled out at version 2.2 and IBM/MSDOS promising  
new features, the gravitational pulled proved to be too much.  
CP/M became another one of those things "that seemed like a good  
idea at the time" <sup>in the tradition of warning from history in order to not repeat it</sup>  
→ The one difference today between the MSDOS user facing an  
uncertain future and the CP/M user facing the onslaught of MSDOS  
seven years ago, <sup>H</sup> is that for the MSDOS user "there are at least  
seven ways to get into the next generation of computing." It may  
be confusing but at least you know that one of these tunnels  
leads to the light.

The open architecture of the original PC and its clones has  
made the migration from MSDOS to whatever the future holds <sup>is</sup>  
accessible to the user by the means of adding a drop-in circuit  
board to the bus.

Editor and Publisher of Micro Cornucopia, David Thompson  
said in a recent interview, that even "if the generic MSDOS goes  
away, all the people have to do is upgrade their processor board  
and away they go again. It's tinker-toys. It's a whole

one should  
note

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different ball game."

For the MSDOS user there is a migration path from the 8088 to the 386 (which would be the better choice than the 286). It's just a matter of when someone will write the software necessary to take advantage of these new chips without making the current user shelve all of his current software. <sup>whereas</sup> For the CP/M user it was a dead end (Zilog, now eight years later, is still trying to get out a bug-free Z800). <sup>out the door</sup>

It takes a special attitude to live and work in close proximity to a giant. The successful ones are those that have courage, plan carefully, and know someone with a working crystal ball.

"Here we go again."

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